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FLOOD INSURANCE STUDY



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36
ORIGINAL

CITY OF
OAKRIDGE,
OREGON
LANE COUNTY



JUNE 3, 1986



Federal Emergency Management Agency

COMMUNITY NUMBER - 410126

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map

FLOOD INSURANCE STUDY

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Oakridge, Lane County, Oregon, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by CH2M HILL, INC., for the Federal Emergency Management Agency (FEMA), under Contract No. H-4582. This study was completed in July 1983.

1.3 Coordination

Streams requiring detailed or approximate study were identified at a meeting attended by representatives of the study contractor, FEMA, and the City of Oakridge in July 1977.

On February 24, 1983, the results of the study contractor work were reviewed at an intermediate coordination meeting attended by representatives of the study contractor, FEMA, and the community.

The U.S. Army Corps of Engineers (COE) was contacted for information concerning this study.

The final community coordination meeting was held on May 29, 1985, and was attended by representatives of FEMA, the study contractor and the city. No problems were raised at the meeting.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated areas of the City of Oakridge, Lane County, Oregon. The area of study is shown on the Vicinity Map (Figure 1).

Floods caused by the overflow of the Middle Fork Willamette River and Salmon Creek were studied by detailed methods within the corporate limits of Oakridge.

An area that was originally designated for study by approximate methods is located in the flood plain of the Middle Fork Willamette River and, therefore, was studied using detailed methods.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through 1985.

2.2 Community Description

Oakridge is located in southwestern Oregon near the headwaters of the Willamette River system, in southeastern Lane County. It is situated approximately 40 miles southeast of Eugene and 30 miles east of Cottage Grove. It is completely surrounded by unincorporated areas of Lane County. The city is located in a valley formed by old river terraces at approximately 1,200 feet in elevation on the western slopes of the Cascade Mountain Range. The surrounding mountains rise from 400 to 1,200 feet above the valley terraces.

The total land area contained within the corporate limits of Oakridge is 1.3 square miles. The population increased from 1,964 in 1960 to 4,300 in 1978 (Reference 1). This increase was due primarily to annexation of the Willamette City area, which had a population of approximately 1,400. The economy of Oakridge depends primarily on the wood products industry and the Willamette National Forest.

The Middle Fork Willamette River, which forms the southern boundary of Oakridge, flows northwesterly to its confluence with the Coast Fork Willamette River, where the Willamette River is formed. It has a length of 84 miles and drains an area of 1,354 square miles.

Salmon Creek, a tributary flowing southwesterly to the Middle Fork Willamette River, is 24.3 miles in length, with a drainage area of 126 square miles.

Development within the flood plains studied is mostly single-family residences and a few businesses. Approximately 28 percent of the land within the corporate limits is vacant (Reference 2). Approximately one-half of the vacant land lies in the flood plain. State

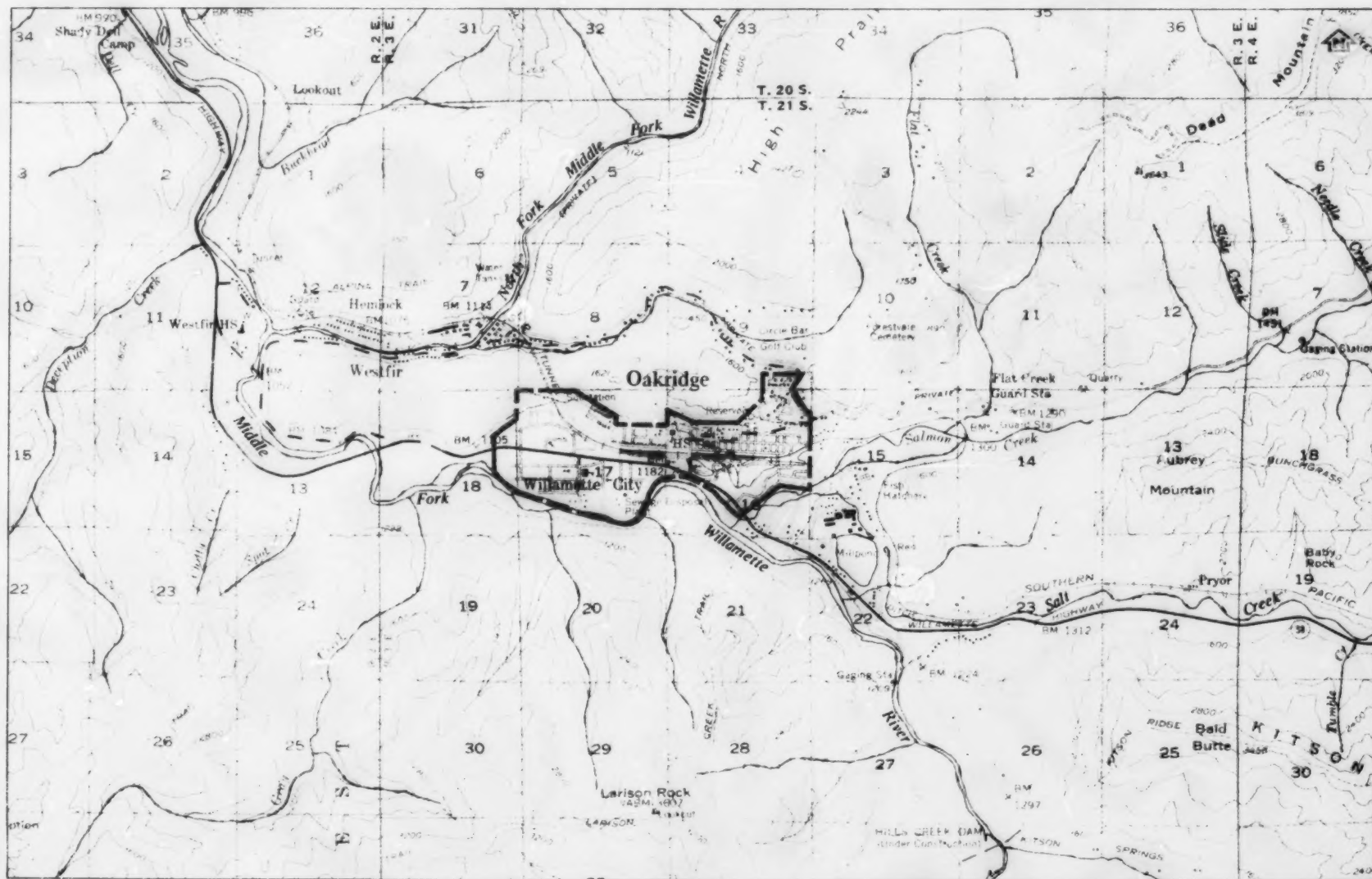


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF OAKRIDGE, OR
(LANE CO.)

APPROXIMATE SCALE



VICINITY MAP

Highway 58 and the Southern Pacific Railroad serve the residents of Oakridge.

Native vegetation, where not cultivated, consists primarily of Douglas fir, Oregon white oak, madrone, blackberries, shrubs, and grasses. Near the streams, black cottonwood, big leaf maple, Oregon ash, and alder are found. The soils consist mainly of impermeable silty clay loam over a substratum of sedimentary rock (Reference 2).

Oakridge has a temperate marine climate, with temperatures ranging from an average of 68°F in July to 38°F in January. Average annual precipitation is 39 inches, with an average recorded snowfall of 21 inches. The average monthly precipitation exceeds 5 inches from November to February and from May to September it is less than 2 inches (Reference 3).

2.3 Principal Flood Problems

Major flooding usually occurs in Oakridge in December and January as a result of heavy rain and snowmelt. Spring snowmelt normally causes only minor flooding.

Major floods have occurred on Salmon Creek in recent years. The floodflows, measured at U.S. Geological Survey (USGS) gage No. 14146500, located 4.6 miles east of Oakridge, are:

	Peak Flow cubic feet per second (cfs)	Return Period
December 1956	10,400 cfs	34 years
December 1964	11,600 cfs	50 years
January 1971	9,020 cfs	22 years

Levees built along both banks of Salmon Creek after the 1956 flooding were intended to prevent a recurrence of flooding in Oakridge. However, during the 1964 and 1971 floods, the city was again flooded because the western levee failed in several locations. The flooding was not caused by floodwaters overtopping the levee, but by erosion that caused the levee to collapse, allowing water into the city. The highest peak discharge of record (11,600 cfs) occurred on December 22, 1964.

Prior to construction of Hills Creek Reservoir, the highest recorded flows on the Middle Fork Willamette River were measured on December 28, 1945. USGS gage No. 14145500, which is located upstream from Oakridge near the mouth of Salt Creek, recorded 34,000 cfs, and USGS gage No. 14148000, which is located downstream from Oakridge near the mouth of the North Fork Middle Fork Willamette River, recorded 81,800 cfs (References 4, 5, and 6).

Since construction of Hills Creek Dam, only one major flood has occurred on the Middle Fork Willamette River at Oakridge; this was in December 1964. Peak recorded flows at the principle stream gages are shown below.

<u>USGS Gage No.</u>	<u>Peak Flow (cfs)</u>	<u>Return Period</u>
14145500	11,800 cfs	90 years
14148000	55,800 cfs	90 years

2.4 Flood Protection Measures

Permanent levees were built along both banks of Salmon Creek by the COE in the late 1950s. Because of development behind the levees and the damage caused to the levees by recent floods, Oakridge has requested heavier riprap to eliminate flood potential along the levees. FEMA was notified by the COE that they would not certify the Salmon Creek levees as providing protection from the 100-year flood due to problems involving water-borne debris; therefore, the analyses for this Flood Insurance Study were conducted based on the levees being in both failed and intact conditions.

Hills Creek Reservoir, completed in 1961 by the COE, provides the major flood control of the Middle Fork Willamette River. The reservoir has a total storage capacity of 356,000 acre-feet, of which 200,000 acre-feet is used for flood control (Reference 7). The 100-year flow in the Middle Fork Willamette River above Salt Creek is reduced from 55,900 cfs to 12,500 cfs and the 500-year flow is reduced from 79,000 cfs to 33,000 cfs because of regulation by Hills Creek Reservoir.

As a nonstructural flood-protection measure, a city ordinance was enacted to control development in identified flood hazard areas.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood

(1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

Peak discharges for Salmon Creek were determined by the COE. The discharges were based on a statistical analysis of discharge records covering a 51-year period at USGS gage No. 14146500 on Salmon Creek (References 4, 5, and 6). This analysis followed the standard log-Pearson Type III method, as outlined by the U.S. Water Resources Council (Reference 9). The discharge at the gage was transferred downstream using a ratio of the differences in drainage area:

$$Q = Q_g \left(\frac{A}{A_g} \right)^n$$

"Q_g" and "A_g" are the discharge and drainage area at the gage. "Q" and "A" are the discharge and drainage area at the mouth of Salmon Creek. The exponent "n" was determined using a log-log plot of the frequency-discharge relationship between the gage on Salmon Creek and USGS gage No. 14147500 on the North Fork Middle Fork Willamette River. The values used for "n" are: 1.0 for the 10- and 50-year flows and 0.78 and 0.65 for the 100- and 500-year flows, respectively.

Regulated discharge values for the Middle Fork Willamette River were determined by the COE as the result of a request by FEMA to update the hydrology on regulated streams in Lane County (Reference 8).

Stream gage records for the Middle Fork Willamette River were statistically analyzed using standard log-Pearson Type III methods, as outlined by the U.S. Water Resources Council (Reference 9). A natural discharge-frequency curve was developed for the USGS gages located on the Middle Fork Willamette River at Salt Creek (No. 14145500) and downstream of the confluence with the North Fork Middle Fork Willamette River (No. 14148000). A regulated discharge-frequency curve was then prepared using COE flood-routing computations for Hills Creek Reservoir in order to reduce expected flood discharges. The regulated and natural discharge-frequency curves were then used to obtain discharge values for the selected recurrence intervals used in this study.

Natural flow-transfer equations, in the form of $Q = KA^{n+1}$, were developed to determine peak flows at points between gages. "Q" is the peak flow in cfs; the exponent "n" and the constant "K" are the slope and the intercept, respectively, of the best fit line on a log-log plot of runoff-per-square-mile versus drainage area; "A" is the drainage area at the point where the flow is to be calculated. The equations used for the selected return intervals are:

$$Q_{10} = 265.98A^{0.786}$$

$$Q_{50} = 530.33A^{0.751}$$

$$Q_{100} = 692.92A^{0.735}$$

$$Q_{500} = 1.150.44A^{0.708}$$

The regulated flow at points between the gages was calculated by adding the difference between the natural flows to the regulated flow at the gage. The releases from the reservoir after the regulated natural peak and the regulated natural peak were compared and the greater value was used for this Flood Insurance Study.

Drainage areas at points between gaging stations were measured on USGS topographic maps (Reference 10).

Peak discharge-drainage area relationships for each stream studied in detail are shown in Table 1.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Water-surface elevations of floods of the selected recurrence intervals were computed through use of the COE HEC-2 step-backwater computer program (Reference 11).

Cross sections for the backwater analyses of the Middle Fork Willamette River and Salmon Creek were obtained by field measurements. Aerial photographs (Reference 12) were used to initially determine the best location for the cross sections. Field reconnaissance verified that the cross sections were in the best location for accurately predicting flood elevations. All bridges and culverts were field measured to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross

Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second)			
		10-Year	50-Year	100-Year	500-Year
Middle Fork Willamette River					
At USGS gage No. 14148000	924	26,300	46,000	57,000	95,000
At Deception Creek	895	24,900	43,900	54,600	91,800
Upstream of North Fork Middle Fork Willamette River	649	12,500	25,100	33,000	62,900
Upstream of Salmon Creek	507	6,000 ¹	13,400	19,500	44,800
At USGS gage No. 14145500	392	6,000 ¹	8,500 ¹	12,500 ¹	33,000 ¹
Salmon Creek					
Confluence with Middle Fork Willamette River	126	7,500	12,400	14,500	20,450

¹ Releases from the reservoir after the regulated natural peak

section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Channel roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observations of the streams and flood plain areas. Roughness values for the main channel of the Middle Fork Willamette River range from 0.045 to 0.055, with flood plain roughness values ranging from 0.050 to 0.065 for all floods. Roughness values for the main channel of Salmon Creek are 0.045, with flood plain roughness values of 0.050 for all floods. The acceptability of all assumed hydraulic factors, cross sections, and hydraulic structure data was checked by computations that duplicated the December 1964 flood profile.

Starting water-surface elevations for the Middle Fork Willamette River and Salmon Creek were calculated using the slope-area method.

Because the levees along Salmon Creek are not considered to provide effective 100-year flood protection due to their susceptibility to damage by water-borne debris, an additional hydraulic analysis was performed removing both levees from the analysis.

The profile labeled "Salmon Creek" represents elevations that would occur if flooding was contained by the levees. This profile is presented in this Flood Insurance Study for informational purposes only, because its flood elevations would not affect Oakridge.

The profile labeled "Salmon Creek-Without Consideration of Levees" represents elevations that would occur by ignoring the existence of the levees.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail. Flooding in Oakridge along Salmon Creek will only occur if the levees fail as they did during floods in 1964 and 1971.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using stereo pairs of aerial photographs at a scale of 1:12,000 (Reference 12).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. Because natural velocities were over 5 feet per second, the increase in velocity attributed to encroachment was limited to 20 percent of the natural velocity. These velocities, however, could be hazardous and should be carefully considered in floodway fringe development. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH ² (FEET)	SECTION ² AREA (SQUARE FEET)	MEAN ² VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT ² FLOODWAY (FEET NGVD)	WITH ² FLOODWAY	INCREASE ²
Salmon Creek								
A	540				1,159.5			
B	912				1,163.5			
C	962				1,164.1			
D	1,495				1,168.7			
E	2,561				1,178.2			
F	3,821				1,193.2			
G	4,296				1,198.2			
H	4,361				1,199.0			
I	4,856				1,203.7			
J	5,671				1,212.0			
K	5,951				1,215.2			

¹Feet Above Mouth ²Floodway Computed Without Consideration of Levee

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF OAKRIDGE, OR
(LANE CO.)

FLOODWAY DATA

SALMON CREEK

//

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Middle Fork Willamette River								
A	16,480	680 ²	4,425	7.5	1,095.0	1,095.0	1,095.7	0.7
B	18,940	511/230 ³	3,226	10.2	1,107.5	1,107.5	1,107.6	0.1
C	21,180	400/95 ³	3,302	10.0	1,118.6	1,118.6	1,119.1	0.5
D	22,820	382/110 ³	3,770	8.8	1,127.2	1,127.2	1,127.4	0.2
E	24,460	727 ²	4,645	7.1	1,135.2	1,135.2	1,136.0	0.8
F	24,960	531 ²	3,695	8.9	1,138.1	1,138.1	1,139.1	1.0
G	26,660	291 ²	2,673	12.3	1,151.3	1,151.3	1,152.1	0.8

¹Feet Above a Point Approximately 4,370 Feet Downstream of State Highway 58 ²Floodway Lies Entirely Outside Corporate Limits ³Width/Width Within Corporate Limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF OAKRIDGE, OR
(LANE CO.)

FLOODWAY DATA

MIDDLE FORK WILLAMETTE RIVER

12

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Salmon Creek - Without Consideration of Levees								
A	540	200 ²	1,302	11.1	1,159.5	1,159.5	1,160.5	1.0
B	912	240/25 ³	1,155	12.6	1,163.5	1,163.5	1,163.5	0.0
C	962	240/30 ³	1,166	12.4	1,164.1	1,164.1	1,164.1	0.0
D	1,495	250/30 ³	1,739	8.3	1,168.7	1,168.7	1,168.7	0.0
E	2,561	550/30 ³	1,636	8.9	1,178.2	1,178.2	1,178.2	0.0
F	3,821	386 ²	1,453	10.0	1,191.0	1,191.0	1,192.0	1.0
G	4,296	290 ²	1,217	11.9	1,197.1	1,197.1	1,197.8	0.7
H	4,361	290 ²	1,479	9.8	1,198.9	1,198.9	1,199.6	0.7
I	4,856	290 ²	1,309	11.1	1,203.1	1,203.1	1,203.6	0.5
J	5,671	300 ²	1,294	11.2	1,212.1	1,212.1	1,212.1	0.0
K	5,951	270 ²	1,348	10.8	1,215.1	1,215.1	1,215.1	0.0

¹Feet Above Mouth ²Floodway Lies Entirely Outside Corporate Limits ³Width/Width Within Corporate Limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF OAKRIDGE, OR
(LANE CO.)

FLOODWAY DATA

SALMON CREEK-WITHOUT CONSIDERATION OF LEVEES

The Salmon Creek floodway was developed with the levees in a failed condition.

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

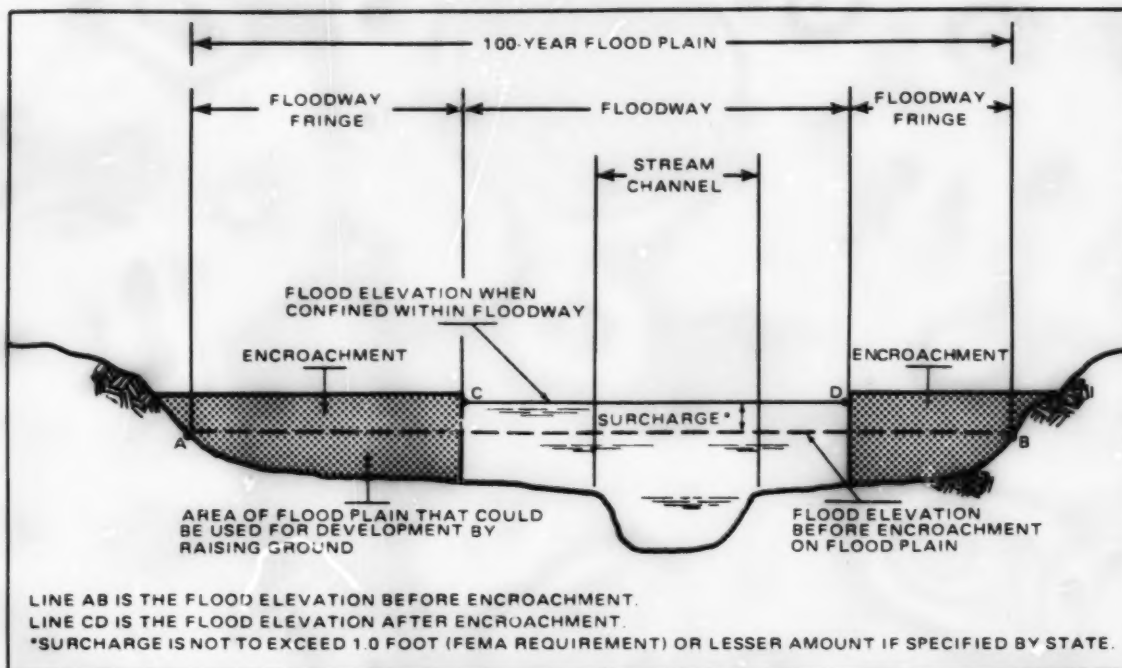


Figure 2. Floodway Schematic

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail affecting the City of Oakridge, Oregon.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following table for more than 20 percent of the reach:

<u>Average Difference Between 10- and 100-Year Floods</u>	<u>Variation</u>
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of Oakridge are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zones A4 and A8: Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.

Zone B: Areas between the Special Flood Hazard Areas and the limits of the 500-year

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION ³ (FEET NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Middle Fork Willamette River Reach 1	0001	-4.1	-1.3	3.5	040	A8	Varies - See Map
Salmon Creek - Without Consideration of Levees Reach 1	0001	-2.0	-0.6	1.2	020	A4	Varies - See Map

¹ Flood Insurance Rate Map Panel

² Weighted Average

³ Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF OAKRIDGE, OR
(LANE CO.)

FLOOD INSURANCE ZONE DATA

MIDDLE FORK WILLAMETTE RIVER-
SALMON CREEK-WITHOUT CONSIDERATION OF LEVEES

flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other local water-control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flood hazard; not subdivided.

The flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community are summarized in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of Oakridge is, for insurance purposes, the principal product of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the NFIP.

6.0 OTHER STUDIES

A Flood Insurance Study is currently being prepared for the unincorporated areas of Lane County (Reference 13). The results of this study will match exactly the Lane County study.

A Flood Hazard Boundary Map (FHBM) has been published for Oakridge (Reference 14). Due to the more detailed analyses used, this study supersedes the FHBM.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Federal Regional Center, 130 228th Street, SW., Bothell, Washington 98011.

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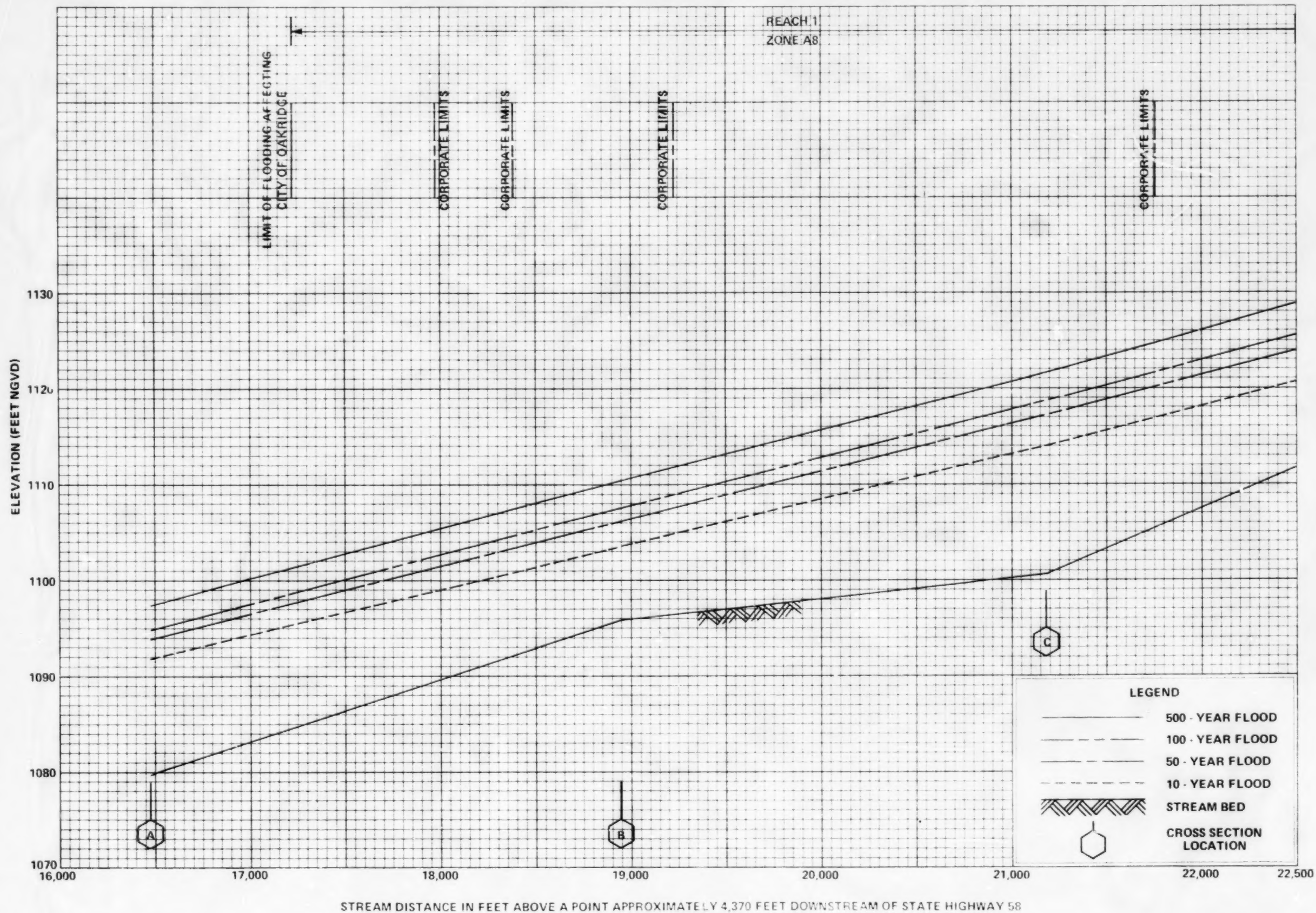
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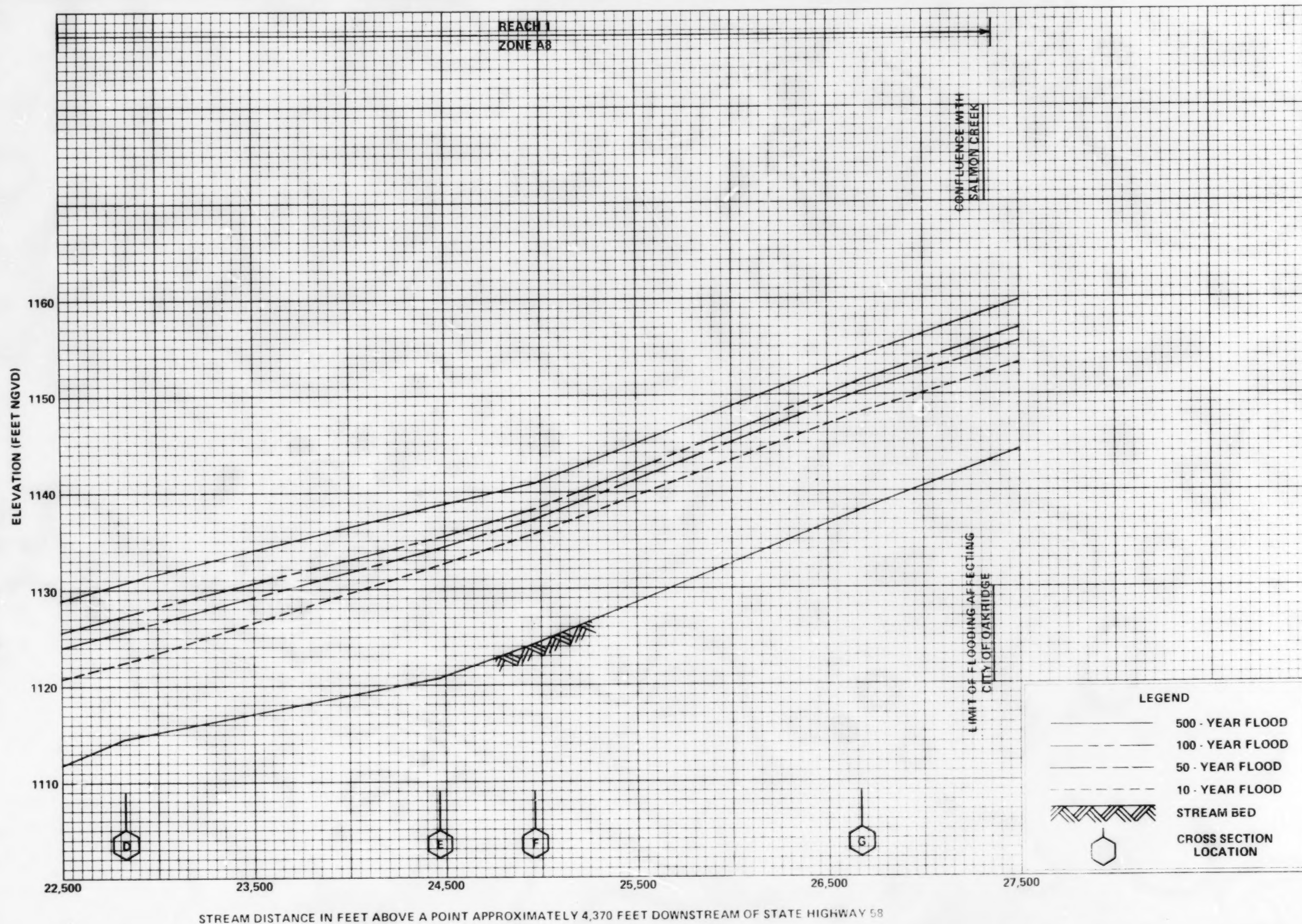
FLOOD PROFILES

MIDDLE FORK WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF OAKRIDGE, OR
(LANE CO.)

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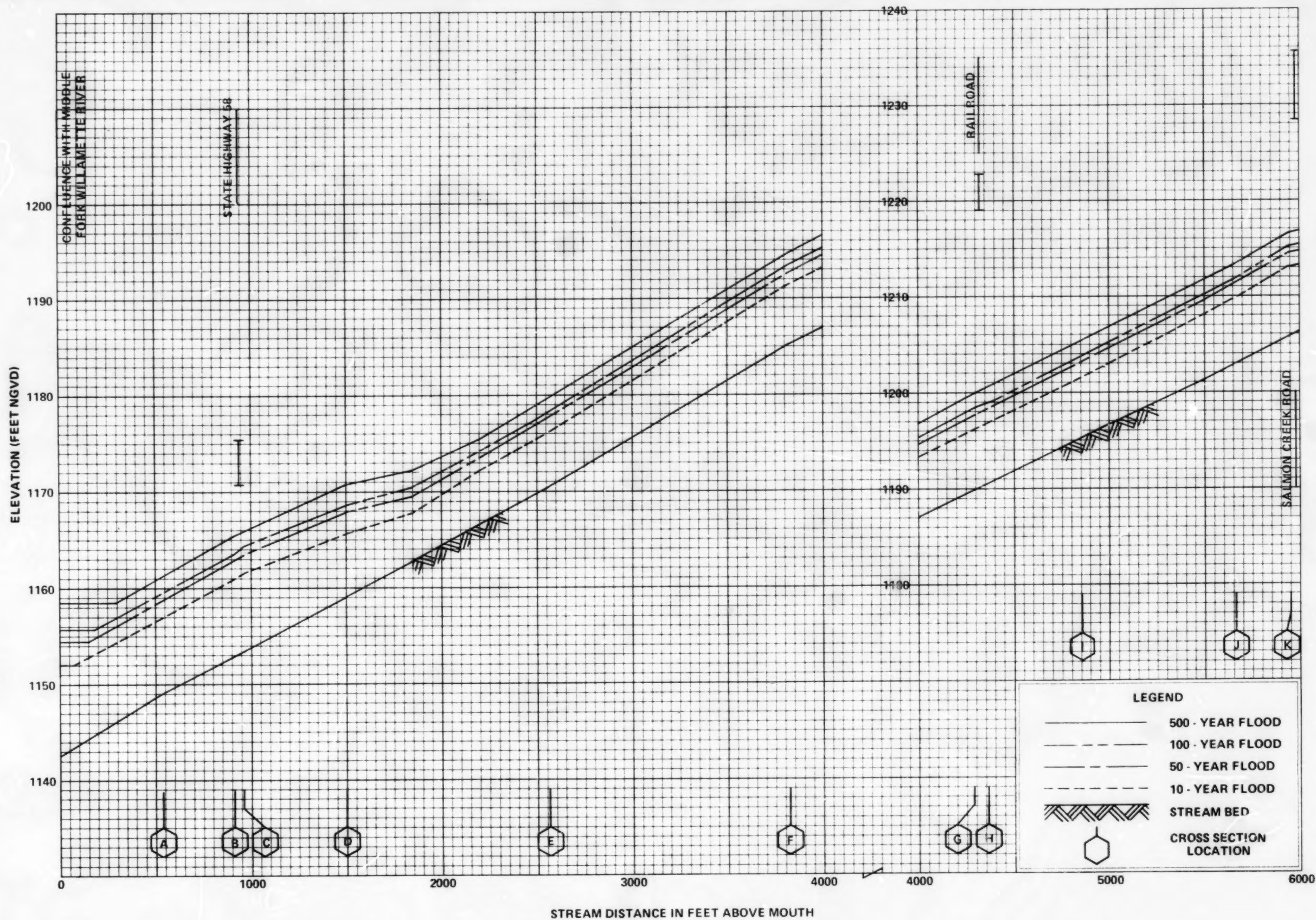
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FLOOD PROFILES

SALMON CREEK

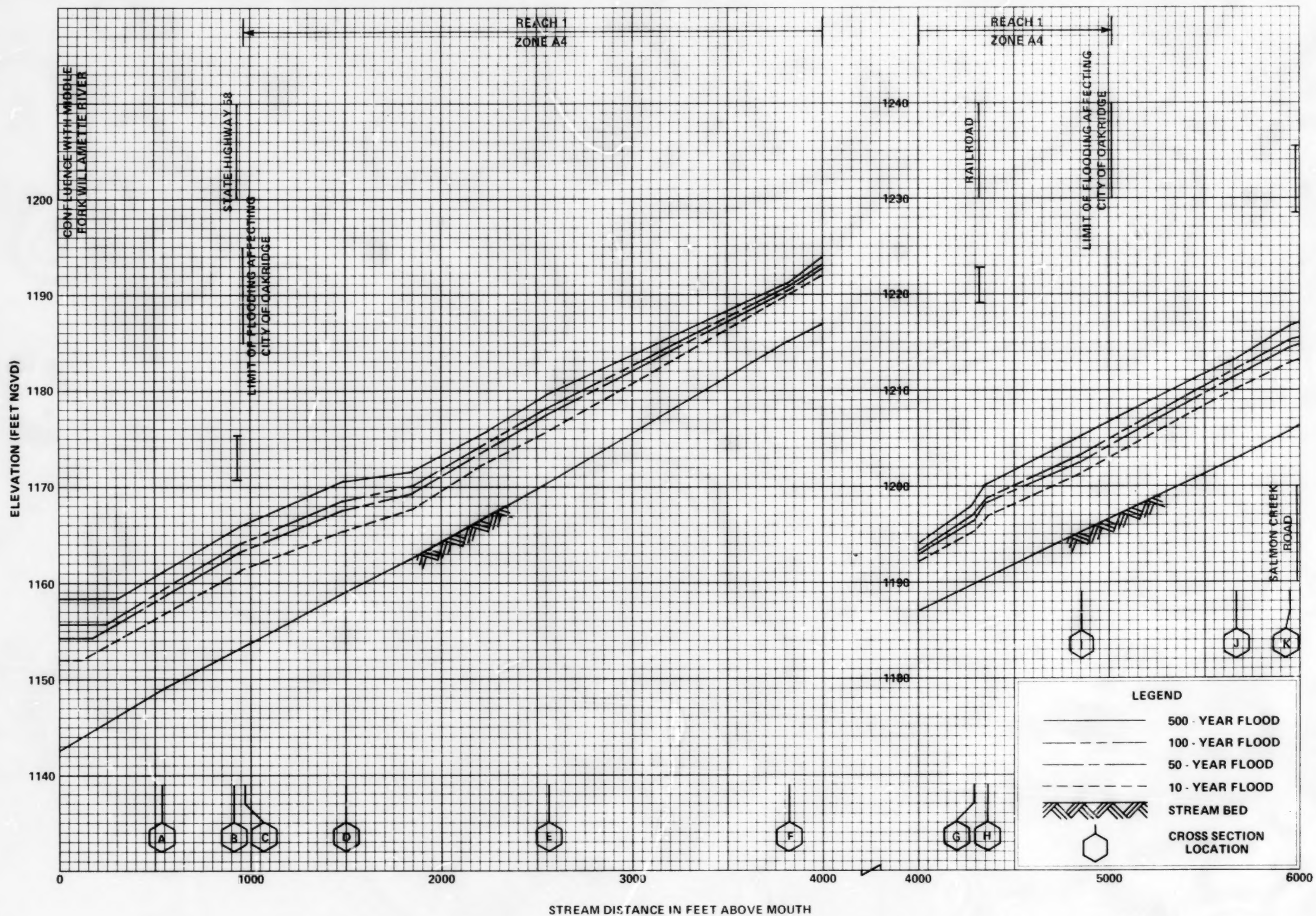
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FLOOD PROFILES

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